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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,342	11/26/2001	Michael Scott Lamphere	13DV13913	9845

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 01/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/994,342	Applicant(s) LAMPHERE ET AL.	
	Examiner Harry D Wilkins, III	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The previous rejection grounds in view of Bruns et al alone have been withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruns et al (US 4,851,090) in view of Hunter et al (US 5,641,391) and Mitsuharu (JP 02-145217).

Bruns et al teach (see abstract and Figures 1-18) a method of and apparatus for electrochemically machining a blisk.

Regarding claim 1, the method includes steps of mounting the blisk in a multiaxis electrochemical machine, followed by electrochemically machining a first row of blades. Thus, Bruns et al fail to teach performing a second electrochemical machining to create a second row of blades while the blisk is still mounted in the machine.

However:

(1) Hunter et al teach (see col. 10, lines 4-12) that using multiple electrodes allows increased speed of fabrication and allowing for multiple electrode geometries. Thus, the advantage of using multiple electrodes is increased efficiency and the ability to electrochemically machine two shapes while the part is not removed from the machine.

(2) Mitsuharu teaches (see abstract and figures) a method where two electrodes are used to electrochemically machine a single part by having independent movement of the two electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a second step of electrochemical machining as taught by Mitsuharu to the method of Bruns et al without removing the blisk from the machine for the purpose of increased efficiency and allowing different machined geometries as taught by Hunter et al.

Regarding claim 11, the apparatus includes means for mounting the blisk and means for electrochemically machining a row of blades. Thus, Bruns et al fail to teach a means for electrochemically machining a second row of blades while the blisk is still mounted in the machine.

However:

(1) Hunter et al teach (see col. 10, lines 4-12) that using multiple electrodes allows increased speed of fabrication and allowing for multiple electrode geometries. Thus, the advantage of using multiple electrodes is increased efficiency and the ability to electrochemically machine two shapes while the part is not removed from the machine.

(2) Mitsuharu teaches (see abstract and figures) a method where two electrodes are used to electrochemically machine a single part by having independent movement of the two electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a second means for electrochemical machining as taught by Mitsuharu to the apparatus of Bruns et al without removing the blisk from the machine for the purpose of increased efficiency and allowing different machined geometries as taught by Hunter et al.

Regarding claims 2 and 12, Bruns et al teach moving the blisk into a pair of electrodes. However, Bruns et al does not teach using two pairs of electrodes. Therefore, it would have been obvious to one of ordinary skill in the art to have added either a second step or second means for moving the blisk into the second pair of electrodes as taught by Hunter et al and Mitsuharu because the second movement means would allow for easily moving the blisk into position to be machined by the second electrodes.

Regarding claims 4, 8 and 13, it would have been within the expected skill of a routineer in the art to have set the two machining electrodes in different locations (planes) within the machine as the apparatus itself is bulky and it would be highly difficult to arrange the second means such that it would not interfere with the first means. By setting up the two means in different planes relative to each other, a routineer in the art would have added means for translating the position of the blisk from one means to the other.

Regarding claims 5 and 14, it would have been within the expected skill of a routineer in the art to have set up the two machining electrodes to be movable into communication with a fixed blisk because each machining electrode means is bulky and

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would interfere with the other means. Thus, each of the machining electrodes would require translating means.

Regarding claims 6 and 15, Bruns et al teach (see col. 5, lines 1-19) rotating the electrodes during machining. Thus, Bruns et al disclose means for rotating the electrode pairs during machining.

Regarding claim 18, Bruns et al teach means for mounting the blisk and a pair of electrode tools with means for translating the tools in two axes and rotating about a third. However, Bruns et al do not teach the second pair of electrodes with translating/rotating means nor the means for translating the blisk from one electrode tool to the other. Hunter et al and Mitsuharu, as above, teach duplicating the electrode tool to increase efficiency and allow for multiple, different geometries to be machined without additional set-up. Thus, by duplicating the electrode tool, there would be a second means for translating the tools in two axes and rotating about a third. In order to space the two electrode tools sufficiently far apart to allow for the blisk to be placed in the machine, one of ordinary skill in the art would have been motivated to have included a means for translating the blisk along a "seventh" axis towards each of the two electrode tools.

Regarding claim 19, the apparatus of Bruns et al included means (54) for rotating the blisk to sequentially position the blades between the electrodes. It would have been within the expected skill of a routineer in the art to have set up the two machining electrodes in different locations (planes) within the machine as the apparatus itself is bulky and it would be highly difficult to arrange the second means such that it would not

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interfere with the first means. By setting up the two means in different planes relative to each other, a routineer in the art would have added means for translating the position of the blisk from one means to the other.

Regarding claim 20, Bruns et al teach a method comprising electrochemically machining a first row of blades. However, Hunter et al and Mitsuharu, as above, teach adding a second set of electrode tools to machine a second row of blades without removing the blisk from the machine and without "re-setting up" the tools between the two sequences. One of ordinary skill in the art would have found it obvious to perform the known "set-up" process for both sets of tools at the same time instead of performing a "reset-up" process after the end of the first machining step.

4. Claims 3, 7, 9, 10, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruns et al in view of Hunter et al and Mitsuharu as applied to claims 1, 2, 4-6, 11-15 and 18-20 above, and further in view of Applicant's admission of prior art.

The teachings of Bruns et al in view of Hunter et al and Mitsuharu are described above.

Regarding claims 3 and 17, Applicant admits as prior art (see paragraphs 12-14) that the steps of setting up the apparatus of Bruns et al includes a first machining step on a scrap blisk (i.e.-sample), removing the blisk to inspect for dimensional tolerances and comparing the dimensions to the desired final dimensions. These steps are repeated until the blisk achieves the final desired dimensions. The next step is mounting the production blisk in the machine and machining it. Therefore, it would have

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been obvious to a routineer in the art to have operated the two electrode pair machine in the same manner by first machining two rows of blades on a scrap blisk using the two sets of electrodes and proceeding until the desired final dimensions were achieved.

Regarding claim 7 and 16, Applicant admits as prior art (see paragraph 15) that in tandem blisks, the two rows of blades have different sizes and configurations. Thus, it would have been obvious to set up the first machining electrodes to create the first row of blades and to set up the second machining electrodes to create the second row of blades in order to independently optimize the processing of each row of blades.

Regarding claims 9 and 10, Applicant admits (see paragraph 12) that the test blisk could be either the production blisk (i.e.-blisk sample is the same as the tandem blisk) or a scrap blisk (i.e.-blisk sample is a different part than the tandem blisk).

Response to Arguments

5. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-Th 10am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Harry D Wilkins, III
Examiner
Art Unit 1742

hdw